Earth posted its second-hottest year ever in 2019, and the 2010s were our warmest decade

Postmedia Breaking News

January 9, 2020 Thursday

Web Edition

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Section: WORLD

Length: 822 words

Body

The planet registered its second-hottest year on record in 2019, capping off a five-year period that ranks as the warmest such span in recorded history. In addition, the 2010s will go down in history as the planet's hottest decade, according to the Copernicus Climate Change Service (C3S), a science initiative of the Europe Union.

The service, which monitors global surface temperatures, determined Earth last year was a full degree warmer (0.6 Celsius) than the 1981-2010 average. This data provides the first comprehensive global look at the state of the climate in 2019, with U.S. agencies such as NASA and the National Oceanic and Atmospheric Administration (NOAA) expected to announce similar results next week.

"2019 has been another exceptionally warm year, in fact the second warmest globally in our data set, with many of the individual months breaking records," said Carlo Buontempo, head of C3S, in a news release.

The past five years averaged 2 to 2.2 degrees (1.1 to 1.2 Celsius) above preindustrial levels, C3S found. The magnitude of warming puts the planet perilously close to one of the temperature guardrails outlined in the Paris climate agreement, in which policymakers agreed to limit by 2100 global warming to "well below" 3.6 degrees Fahrenheit, or 2 degrees Celsius, above preindustrial levels.

The aspirational goal in the agreement is to hold temperatures to a 2.7-degree increase, or 1.5 Celsius, above preindustrial levels, which is a target favoured by the countries considered most vulnerable to climate impacts, such as small island nations.

'We're going to die': Toronto mother says young daughter terrified by school presentation on climate change(https://nationalpost.com/news/canada/were-going-to-die-toronto-mother-says-young-daughter-terrified-by-school-presentation-on-climate-change)

Australia's leaders unmoved on climate action after devastating bushfires(https://nationalpost.com/pmn/environment-pmn/australias-leaders-unmoved-on-climate-action-after-devastating-bushfires-3)

'Intimidating:' Alberta's energy war room singles out climate campaigner(https://nationalpost.com/news/canada/intimidating-albertas-energy-war-room-singles-out-climate-campaigner)

The rapid warming has occurred as concentrations of carbon dioxide in the atmosphere, a long-lived heat-trapping greenhouse gas, continue to increase. Copernicus cited satellite measurements showing the amount of carbon dioxide in the planet's atmosphere in 2019 increased by 2.3 parts per million, which was larger than the growth rate in 2018 but below the growth rate of 2.9 ppm in 2015.

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Overall, the amount of carbon dioxide in the atmosphere is now the highest level in human history and probably has not been seen on this planet for 3 million years. However, to meet the Paris targets, the world would need to commit to rapidly slashing carbon emissions at a rate far outside the plans of any of the largest emitters, making the 2.7-degree goal technically possible but politically unlikely.

This past year featured numerous climate milestones, most of which indicated human and natural systems are already being buffeted by extensive impacts from relatively low levels of climate change, considering the warming projected to come in the next several decades.

Last year, extreme climate events, such as a searing European heat wave, drove home the urgency of reducing emissions of greenhouse gases. The recent bush fires in Australia charred millions of acres in December, which was that country's hottest month on record, capping off its hottest and driest year.

A pair of cyclists ride over MacKinnon Ravine Park at sunset during warm weather in Edmonton, on Monday, Jan. 17, 2019.

Last year was also the warmest summer in the Northern Hemisphere, and Europe had its hottest year on record. Europe also had its hottest December on record as 2019 came to a close.

The year also brought fierce hurricanes that rapidly intensified from weak to monstrous storms - a process in which climate change is thought to play a role. Among them was Hurricane Dorian, which devastated the northwestern Bahamas. In the United States, Alaska experienced record warmth, with an astonishing lack of sea ice in the Bering and Chukchi Seas even during winter.

The year also brought troubling signs that natural systems that serve to store huge quantities of carbon dioxide and methane, the latter being another powerful greenhouse gas, may be faltering as temperatures increase. In December, a federal report indicated the permafrost that rings the Arctic may already be a net source of atmospheric carbon, which would accelerate global warming in what is known as a positive feedback. Raging fires in the Amazon during the year, largely as a result of a pro-development government in Brazil, now threaten to turn the world's most productive rainforest into a drier, less carbon-rich savanna. !@COPYRIGHT=© 2020 Postmedia Network Inc. All rights reserved.

Load-Date: January 9, 2020

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